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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,649

12/04/2006

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24793-53

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24256 7590 02/04/2009  
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EXAMINER

HEYER, DENNIS

ART UNIT

PAPER NUMBER

4121

MAIL DATE

DELIVERY MODE

02/04/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/552,649	<b>Applicant(s)</b> GRANELI ET AL.	
	<b>Examiner</b> DENNIS HEYER	<b>Art Unit</b> 4121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-62 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Election/Restrictions*

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to **elect a single invention** to which the claims must be restricted.

**Group I**, claim(s) 1 – 10, drawn to an immobilized multilayer structure comprising a plurality of vesicles.

**Group II**, claim(s) 11 – 22, drawn to an immobilized multilayer structure comprising a plurality of vesicles so that at least two vesicles are attached to each linker.

**Group III**, claim(s) 23 – 32, drawn to an immobilized multilayer structure comprising a plurality of vesicles, wherein the vesicles are directly attached to the structure

**Group IV**, claim(s) 33 – 48, drawn to a method for producing an immobilized multilayer structure comprising a plurality of vesicles.

**Group V**, claim(s) 49 – 53, drawn to a biosensor comprising an immobilized multilayer structure comprising a plurality of vesicles.

**Group VI**, claim(s) 55, drawn to a method for specifically removing compounds from a solution with an immobilized multilayer structure comprising a plurality of vesicles.

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**Group VII**, claim(s) 55 – 59, drawn to a method of sensing a release of compounds from the vesicles of an immobilized multilayer structure comprising a plurality of vesicles.

**Group VIII**, claim(s) 60, drawn to a method of imaging with a structure comprising an immobilized multilayer structure comprising a plurality of vesicles.

**Group IX**, claim(s) 61 – 62 , drawn to a kit comprising compositions appropriate for production of an immobilized multilayer structure comprising a plurality of vesicles.

As set forth in Rule 13.1 of the Patent Cooperation Treaty (PCT), "the international application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept." Moreover, as stated in PCT Rule 13.2, "where a group of inventions is claimed in one and the same international application, the requirement of unity of invention referred to in Rule 13.1 shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features." Furthermore, Rule 13.2 defines "special technical features" as "those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art."

The inventions listed as Groups I and (II – IX) do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical feature of Group I, a surface immobilized multilayer structure comprising a plurality of vesicles is anticipated by the prior art. As disclosed in

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Bredehorst *et al.* (WO/2002/081739) this reference teaches a solid support (i.e. surface) which has been modified with immobilized linkers (single-stranded oligonucleotides). The immobilized linkers are directly attached, via hybridization, to a liposome-attached, complementary single-stranded oligonucleotide (a linker). Additionally, the reference discloses that the attached liposomes (vesicles) may encapsulate biologically active compounds such as serotonin (Claim 4). Furthermore, the functionalized surface may be modified to provide a structure containing a plurality of vesicles as described in Figure 4 of the reference. These elements comprise the limitations cited in instant Claim 1. Thus the elements of the subject matter relating to Group I of the instant application are not novel over the prior art.

As such, Group I does not share a special technical feature with the instant claims of Groups II – IX. Therefore, the claims are not so linked within the meaning of PCT Rule 13.2 so as to form a single inventive concept, and unity between Groups I and II – IX is broken.

### ***Election of Species***

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

**If Group I, Group II or Group III is elected, EACH of the following species elections is required:**

a) Regarding Claims 6, 18 and 28: **Indicate whether or not** the structures according to claims 1, 11 or 23 are “coated with an outer shell comprising compounds selected from the group consisting of”... , are present and, if present, **elect a single compound from one of the groups** as disclosed in Claims 6, 18 and 28 (such as, polyethylene glycol or, S-layer protein, etc) as described on page 23 of the instant specification, or otherwise disclosed. Claims 6, 18 and 28 read upon this species. For this species: Claims 1 – 5 and 7 – 10 are generic for Group I. Claims 11 – 17 and 19 – 22 are generic for Group II. Claims 23 – 27 and 29 – 32 are generic for Group III.

b) Regarding Claims 7, 19 and 29: **Indicate whether or not** the interior volume of the structure according to claims 1, 11 or 23 “comprises compounds disclosed in claims 7, 19 and 29 selected from the group consisting of ions, dyes, drugs ...” are present and, if present, **elect a single compound from one of the groups** from Claim 7 and 29 (such as, a **single** dye or, a drug, etc) as described on page 23 of the instant specification, or otherwise disclosed. Claims 7, 19 and 29 read upon this species. For this species: Claims 1 – 6 and 8 – 10 are generic for Group I. Claims 11 – 18 and 20 – 22 are generic for Group II. Claims 23 – 28 and 30 – 32 are generic for Group III.

c) Regarding Claims 9 – 10, 21 – 22 and 31 – 32: **Indicate whether or not** the structures according to claims 1, 11 or 23 will “be adapted for release...”, as disclosed in claims 10, 21 and 31 and, if so adapted, **elect a single release trigger**

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from Claims 11, 22 and 32 as described on page 24 of the instant specification, or otherwise disclosed. Claims 9 – 10, 21 – 22 and 31 – 32 read upon this species. For this species: Claims 1 – 8 are generic for Group I. Claims 11 – 20 are generic for Group II. Claims 23 – 30 are generic for Group III.

**If Group IV is elected, EACH of the following species elections is required:**

a) Regarding Claim 41: **Indicate whether or not** the method for producing a surface-immobilized structure...” according to claim 33, is to be “coated with an outer shell comprising compounds selected from the group consisting of...” and, if present, **elect a single compound from one of the groups**, as disclosed in Claim 41 (such as, polyethylene glycol or, S-layer protein, etc) as described on page 23 of the instant specification, or otherwise disclosed. Claim 41 reads upon this species. Claims 33 – 40 and 42 – 48 are generic.

b) Regarding Claim 42: **Indicate whether or not** the method for producing a surface-immobilized structure...” according to claim 33, “comprises compounds disclosed in Claims 42 selected from the group consisting of ions, dyes, drugs...” and, if present, **elect a single compound from one of the groups**, as disclosed in Claim 42 (such as, a **single** dye or, a drug, etc) as described on page 23 of the instant specification, or otherwise disclosed. Claim 42 reads upon this species. Claims 33 – 41 and 43 – 48 are generic.

c) Regarding Claims 45 and 46: **Indicate whether or not** the method for producing a surface-immobilized structure...” according to claim 33, will “be adapted for

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releasing compounds from the vesicle.” as described in claim 45 and, if so adapted, **elect a single release trigger** from Claims 46 as described on pages 23 – 24 of the instant specification, or otherwise disclosed. Claim 45 and 46 read upon this species. Claims 33 – 44 and 47 – 48 are generic.

d) Regarding Claims 47 and 48: **Indicate whether or not** the method for producing a surface-immobilized structure...” according to claim 33, will “be followed by a step of releasing said multilayer structure from said surface.” as described in claim 47 and, if so adapted, **elect a single release trigger** from Claims 48 as described on pages 23 – 24 of the instant specification, or otherwise disclosed. Claim 47 and 48 read upon this species. Claims 33 – 46 are generic.

**If Group V is elected, EACH of the following species elections is required:**

a) Regarding Claims 52 and 53: **Indicate whether or not** the biosensor is present as an “optical biosensor” (Claim 52) **or** a “mechanical biosensor” (Claim 53) and, **elect a single type of biosensor**. Claims 52 - 53 read upon this species. Claims 49 – 51 are generic.

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features in that each species contains a distinct moiety such that species is of a dissimilar nature.

**Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species to be examined** even though the requirement may be traversed (37 CFR 1.143) **and (ii) identification of the claims encompassing the elected species**, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

The election of the species may be made with or without traverse. To preserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the election of species requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are

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added after the election, applicant must indicate which of these claims are readable on the elected species.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the species unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other species.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

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In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DENNIS HEYER whose telephone number is (571)270-7677. The examiner can normally be reached on Monday-Friday 8AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Nolan can be reached on (571)272-0847. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DH

/Patrick J. Nolan/  
Supervisory Patent Examiner, Art Unit 4121